

REMARKS

I. Status and Disposition of the Claims

Claims 19-42 are pending. By the above amendment, claim 19 has been amended to recite, *inter alia*, that “when an excess temperature is reached. . . the. . . reactive substance. . . chemically reacts with the. . . dye substance so as to irreversibly modify the at least one characteristic peak.” Claim 19. Claim 42 has been amended to maintain strict antecedent basis, to effect grammatical changes, and to recite, *inter alia*, that the claimed change in characteristic peak is “irreversible.” Claim 42.

Support for these amendments may be found in the as-filed specification and claims. For example, support for these amendments may be found at page 2, lines 8-23, page 4, lines 27-31, and page 6, lines 17-20 of the as-filed specification. Accordingly, Applicants submit that the above amendments do not raise any issues of new matter.

Applicants acknowledge that the Examiner has indicated that claims 23-28, 35 and 40 would be allowable if rewritten in independent form. Final Office Action, page 7. However, Applicants maintain that all of the pending claims are patentable for at least the following reasons.

II. Response to Claim Rejections

A. § 102(a) rejection of claim 42

The Examiner rejects claim 42 under 35 U.S.C. § 102(a) as anticipated by Japanese Publication No. 2002-129055 (“Fujita”) for the reasons disclosed at page 2 of

the Final Office Action. Applicants respectfully disagree for at least the following reasons.

To establish anticipation under 35 U.S.C § 102, the Examiner must demonstrate that a reference teaches each and every element of a claim. See M.P.E.P § 2141. In the present case, the Examiner has failed to meet this burden, at least because Fujita does not teach each and every element of present claim 42.

In particular, Fujita fails to disclose a temperature indicator for a tire “comprising at least one reactive substance and at least one dye substance, wherein. . . when an excess temperature is reached in the tyre, the at least one reactive substance. . . chemically reacts with the at least one dye substance so as to **irreversibly** modify the at least one characteristic peak.” Claim 42 (emphasis added). On the contrary, Fujita clearly teaches a microcapsule pigment “having a **reversible** heat-discoloring property” Fujita, abstract (emphasis added). Fujita therefore does not teach each and every element of present claim 42.

For at least the foregoing reasons, the § 102(a) rejection of claim 42 as anticipated by Fujita is improper, and should be withdrawn.

B. § 103(a) rejection of claims 19-22, 29, 31-34, and 36-39

The Examiner rejects claims 19-22, 29, 31-34 and 36-39 under 35 U.S.C. § 103(a) as unpatentable over Canadian Patent No. 781,210 (“Buckland”) in view of british Patent No. 1,147,875 (“Robert”), German Patent No. DE 19643995 (“Jenke”), and U.S. Pre-Grant Publication No. 2005/0087725 (“Kanakkanatt”) for the reasons disclosed at pages 2-5 of the Final Office Action. In particular, the Examiner alleges

that one of ordinary skill in the art would have found it obvious to use the temperature indicating paints of Robert in the pneumatic tire construction Buckland. *See Id.* at 3. The Examiner cites Jenke and Kanakkanatt in support of a further assertion that it would have been obvious to one of ordinary skill at the time of the invention to employ such paints on *cured* pneumatic tires, as claimed. *See Id.* at 4. Applicants respectfully disagree with and traverse this rejection for at least the following reasons.

Several basic factual inquiries must be made in order to determine the obviousness or non-obviousness of claims of a patent application under 35 U.S.C. § 103. These factual inquiries, as set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 U.S.P.Q. 459, 467 (1966), require the Examiner to:

- (1) Determine the scope and content of the prior art;
- (2) Ascertain the differences between the prior art and the claims in issue;
- (3) Resolve the level of ordinary skill in the pertinent art; and
- (4) Evaluate evidence of secondary considerations.

The obviousness or non-obviousness of the claimed invention is then evaluated in view of the results of these inquiries. *Graham*, 383 U.S. at 17-18, 148 U.S.P.Q. at 467; *see also KSR Int'l Co. v. Teleflex Inc.*, 82 U.S.P.Q.2d 1385 (2007) and M.P.E.P. §2141 (Rev. 6, Sept 2007).

The Supreme Court in *KSR* also held that “[t]here is no necessary inconsistency between the idea underlying the TSM [teaching, suggestion, motivation] test and the *Graham* analysis.” M.P.E.P. §2141 (rev. 6, Sept. 2007), citing *KSR* at 82 U.S.P.Q. 2d at 1396. Applicants understand this to mean that when applicable, as here, TSM

reasoning may still be applied not only by an examiner but also by Applicants to refute a §103 rejection.

In the present case, the cited references each differ from the presently claimed invention as discussed below.

Claim 19 recites,

[a] cured pneumatic tyre, comprising: at least one temperature indicator; wherein the at least one temperature indicator comprises: at least one reactive substance; and at least one dye substance; wherein the at least one reactive substance has a threshold temperature, wherein the at least one dye substance has at least one characteristic peak in its absorption or emission spectrum, wherein, when an excess temperature is reached in the cured pneumatic tyre, the at least one reactive substance is heated above the threshold temperature and chemically reacts with the at least one dye substance so as to irreversibly modify the at least one characteristic peak.

Claim 19. As discussed below, however, nothing of record provides any impetus that would motivate one of ordinary skill in the art at the time the invention was made to arrive at the claimed invention.

Buckland is drawn towards the use of temperature indicators as a means for determining whether during production a green (i.e., uncured) tire is exposed to heat sufficient to cure the rubber making up the tire. See Buckland, page 4, lines 10-25. Specifically, Buckland employs a strip of temperature indicating material during the formation of a tire. *Id.* at page 6, line 28-page 7, line 5. If the indicator is exposed to a desired temperature (e.g., a desired curing temperature) it changes color, thereby allowing operators to easily determine if satisfactory curing of the tire has occurred. *Id.* at page 6, line 28-page 7 line 5.

Buckland does not, however, disclose a temperature indicator comprising a reactive substance and a dye substance, as claimed. See claim 19. Rather, Buckland

only generally mentions that “substances that are supplied by paint manufacturers specializing in the heat indicator field” are suitable. Buckland, page 4. Applicants submit, however, that this broad disclosure does not provide one of ordinary skill with any impetus to select the claimed temperature indicator. Indeed, Buckland is completely silent with respect to the specifically claimed temperature indicator.

In fact, it has been long held that just because the prior art may provide a broad genus disclosure that may encompass a claimed species or subgenus is not sufficient by itself to establish a *prima facie* case of obviousness. See *In re Baird*, 16 F.3d 380, 382, 29 U.S.P.Q.2d 1550, 1552 (Fed. Cir. 1994) (emphasis added).

Moving on, the Examiner relies on Robert as evidence of temperature indicating paints, e.g., those mentioned by Buckland. See Office Action, page 3. However, Robert cannot cure the deficiencies of Buckland, at least because it too fails to disclose a temperature indicator comprising a reactive substance and a dye substance that chemically react with one another, as claimed. See claim 19 (emphasis added). Indeed, in withdrawing the prior § 102 rejection of claim 42 in view of Robert, the Examiner admits that Robert does not teach a temperature indicator that operates via chemical reaction. See Final Office Action, page 7 (“It is initially noted that applicant’s arguments with respect to Robert are persuasive with respect to claim 42. . . .”). Thus, Applicants submit that Robert, like Buckland, provides no guidance to one of ordinary skill to use a temperature indicator in accordance with the claims.

Jenke fares no better than Buckland and Robert with respect to the claimed temperature indicator.¹ Jenke generally discusses monitoring tire temperature by applying a temperature indicator to the side walls of a tire. See Jenke translation, page 1, paragraph 4. However, Jenke is completely silent with respect to the use of a temperature indicator comprising a reactive substance and a dye substance, wherein “the . . . reactive substance. . . **chemically** reacts with the . . . dye substance so as to **irreversibly** modify the at least one characteristic peak[,]” as discussed below. Claim 19 (emphasis added).

Indeed, Jenke only discloses the use of temperature indicators that exhibit a color change that is **reversible**. See Jenke translation, page 1, paragraph 4, and page 2, paragraph 8. As such, Jenke’s indicators are clearly different from the claimed temperature indicators, which exhibit an irreversible change. See Claim 19.

Accordingly, Jenke’s specifically disclosed temperature indicators are clearly distinct from the claimed temperature indicator. Furthermore, Jenke’s general disclosure regarding temperature indicators can at best be considered coextensive with the general disclosures of Buckland and Robert. That is, Jenke’s broad disclosure may encompass the claimed temperature indicators. However, the fact that a claimed species or subgenus is encompassed by a prior art genus is not sufficient by itself to establish a *prima facie* case of obviousness. See *In re Baird*, 16 F.3d 380, 382, 29 USPQ2d 1550, 1552 (Fed. Cir. 1994) (emphasis added). Thus, Applicants submit that Jenke, alone or in combination with Buckland and/or Robert provides no impetus that would drive one of ordinary skill to the claimed invention.

¹ The examiner provided an English translation of Jenke with the Final Office Action. All

Finally, Kanakkanatt cannot cure the deficiencies of Buckland, Robert, and Jenke. Kanakkanatt relates to a “thermochromic tire or material in part thereof which **reversibly** changes color with temperature.” Kanakkanatt, paragraph [0013] (emphasis added). To accomplish this purpose, Kanakkanatt applies thermochromic dyes that exhibit **reversible** color change to the surface of a tire. *See Id.* at [0013]. As examples of such dyes, Kanakkanatt mentions the positive and negative thermochromic dyes described in U.S. Patent No. 6,165,234. *See Id.* at [0030].

Consideration of the '234 patent reveals that all of the thermochromic dye materials disclosed therein exhibit **reversible** color change. *See* the '234 patent, column 2, lines 1-44 (emphasis added). These thermochromic **dyes** should not be confused with the positive thermochromic **materials** also disclosed in the '234 patent, some of which exhibit “more or less permanent” color change. *See Id.* at 45-61. These materials are based on complexes formed between a metal salt and a solvent. *See Id.* As such, they are not dyes. *See* claim 19. As a result, Kanakkanatt's indication that the *dyes* of the '234 patent may be used does not provide any direction to one of ordinary skill to arrive at the claimed invention..

Accordingly, Buckland, Robert, Jenke, and Kanakkanatt do not teach or even suggest each and every element of the claims. Moreover, the Examiner has pointed to no other evidence (e.g., the knowledge of one of ordinary skill) in support of a tenable rationale as to *why* one of ordinary skill in the art at the time the invention was made would have found the claimed invention obvious. For at least these reasons, the § 103(a) rejection of claims 19-22, 29, 31-34, and 36-39 under § 103(a) as being

citations to Jenke refer to this translation.

unpatentable over Buckland, Robert, Jenke, and Kanakkanatt is improper and should be withdrawn.

C. § 103(a) rejections of claims 30 and 41

The Examiner rejects claim 30 under 35 U.S.C. § 103(a) as being unpatentable over Buckland, Robert, Jenke, and Kanakkanatt, and further in view of U.S. Patent No. 4,155,887 ("Hetson") for the reasons discussed on pages 5 and 6 of the Final Office Action. The Examiner also rejects claim 41 under 35 U.S.C. § 103(a) as being unpatentable over buckland, Robert, Jenke, Kanakkanatt, and further in view of U.S. Patent No. 3,607,498 (Kubota) for the reasons discussed on page 6 of the Final Office Action.

Applicants respectfully disagree with the Examiner, at least because Hetson and Kubota do not rectify the deficiencies of Buckland, Robert, Jenke, and Kanakkanatt described above. That is, while these references may disclose other aspects of the claimed invention, they do not disclose the claimed temperature indicator. As a result, these additional references do not provide any information that would motivate one of ordinary skill to arrive at the claimed invention.

Applicants therefore submit that the § 103(a) rejections of claims 30 and 41 are improper, and should be withdrawn.

III. Conclusion


In view of the foregoing amendments and remarks, Applicants respectfully request the reconsideration of this application and the timely allowance of the pending

claims. If there is any fee due in connection with the filing of this Response, please charge the fee to Deposit Account No. 06-0916.

Respectfully submitted,

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